

TY061

- 44 -

---

WHAT IS CLAIMED IS:

---

1. A heat-shrinkable polyester film having a transverse tear defect percentage of about 20% or less as determined in the following vibration test:

the film is rolled into a tubular shape, two of its opposite edges bonded together, and then the tubular film is placed around a vertical stack (total weight: 660 g) of three food container cans each having a diameter of 72 mm and a height of 55 mm; the can stack with the tubular film placed therearound is passed through a shrink tunnel to shrink the tubular film onto the can stack; a total of 18 packs of such can stacks are placed into a cardboard box having a length of 455 mm, a width of 230 mm and a height of 165 mm (6 packs in the length direction by 3 packs in the width direction), and the cardboard box is sealed; the cardboard box is vibrated along the width direction for 30 min by a stroke of 50 mm and at a vibration rate of 180 reciprocations/min, after which the transverse tearage of the tubular film is visually observed; and the transverse tear defect percentage (%) is determined based on the number of defective packs per 18 packs, wherein the defective pack is any pack having a tear flaw of 30 mm or longer along a can periphery.

2. A heat shrinkable polyester film according to claim 1, wherein the film has a longitudinal refractive index  $N_x$  and a transverse refractive index  $N_y$  which satisfy the following expressions (1) and (2):

$$1.561 < N_x < 1.566 \quad (1); \text{ and}$$

$$0.040 < N_y - N_x < 0.070 \quad (2).$$

3. A heat shrinkable polyester film according to claim 1,

TY061

- 45 -

wherein the film has a shrinkage of about 50% or more along its main shrinkage direction when the film is put in hot water of 95°C for 10 sec.

4. A heat shrinkable polyester film according to claim 1, wherein the film has a shrinkage of about 10% to about 25% along a direction perpendicular to its main shrinkage direction when the film is put in hot water of 95°C for 10 sec.

5. A heat shrinkable polyester film according to claim 1, wherein the film has a solvent adhesiveness with 1,3-dioxolane.

6. A heat shrinkable polyester film according to claim 1, wherein the film can be used as a multi-packaging film.

7. A heat shrinkable polyester film, wherein:

the film has a shrinkage of about 10% to about 40% along its main shrinkage direction when the film is put in hot water of 70°C for 5 sec;

the film has a shrinkage of about 50% or more along its main shrinkage direction when the film is put in hot water of 95°C for 5 sec;

the film has a shrinkage of about 10% or less along a direction perpendicular to its main shrinkage direction when the film is put in hot water of 95°C for 5 sec; and

when the film is formed into a label having a bonded portion, the bonded portion of the label has an adhesive retention of about 95% or more after shrinkage.

8. A heat shrinkable polyester film according to claim 7, wherein the bonded portion of the label has an adhesive

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

SWH  
H

TY061

- 46 -

retention of about 97% or more after shrinkage.

9. A heat shrinkable polyester film according to claim 7, wherein the bonded portion of the label has an adhesive retention of about 99% or more after shrinkage.

10. A heat shrinkable polyester film according to claim 7, wherein the bonded portion of the label has an adhesive retention of about 99.5% or more after shrinkage.

11. A heat shrinkable polyester film according to claim 7, wherein the label is a tubular label formed by bonding together two of opposite edges of a rectangular sheet of the film.

12. A heat shrinkable polyester film according to claim 7, wherein the bonded portion is a portion of a tubular label made of a rectangular sheet of the film where two of its opposite edges are bonded together.

Sub  
AZ 13. A heat shrinkable polyester film according to claim 7, wherein the film is a cap sealing heat shrinkable polyester film.

14. A cap sealing label made of a heat shrinkable polyester film according to claim 7.

Sub  
AZ 15. A heat shrinkable polyester film, wherein:  
the film has a shrinkage of about 10% to about 40% along its main shrinkage direction when the film is put in hot water of 70°C for 5 sec;  
the film has a shrinkage of about 50% or more along its main shrinkage direction when the film is put in hot

TY061

- 47 -

water of 95°C for 5 sec;

the film has a shrinkage of about 10% or less along a direction perpendicular to its main shrinkage direction when the film is put in hot water of 95°C for 5 sec;

the film has a film haze of about 3% to about 10% for a film thickness of 50 µm; and

when the film is formed into a label having a bonded portion, the bonded portion of the label has an adhesive retention of about 95% or more after shrinkage.

16. A heat shrinkable polyester film according to claim 15, wherein the label is a tubular label formed by bonding together two of opposite edges of a rectangular sheet of the film.

17. A heat shrinkable polyester film according to claim 15, wherein the bonded portion is a portion of a tubular label made of a rectangular sheet of the film where two of its opposite edges are bonded together.

18. A heat shrinkable polyester film according to claim 15, wherein the film is a cap sealing heat shrinkable polyester film.

19. A cap sealing label made of a heat shrinkable polyester film according to claim 15.

20. A heat shrinkable polyester film, wherein:

the film has a shrinkage of about 10% to about 40% along its main shrinkage direction when the film is put in hot water of 70°C for 5 sec;

the film has a shrinkage of about 50% or more along its main shrinkage direction when the film is put in hot

TY061

- 48 -

water of 95°C for 5 sec;

the film has a shrinkage of about 10% or less along a direction perpendicular to its main shrinkage direction when the film is put in hot water of 95°C for 5 sec;

the film has a shrinkage of about 15% to about 30% along its main shrinkage direction when the film is put in hot water of 80°C for 5 sec after a preform process; and when the film is formed into a label having a bonded portion, the bonded portion of the label has an adhesive retention of about 95% or more after shrinkage.

21. A heat shrinkable polyester film according to claim 20, wherein the label is a tubular label formed by bonding together two of opposite edges of a rectangular sheet of the film.

22. A heat shrinkable polyester film according to claim 20, wherein the bonded portion is a portion of a tubular label made of a rectangular sheet of the film where two of its opposite edges are bonded together.

23. A heat shrinkable polyester film according to claim 20, wherein the film is a cap sealing heat shrinkable polyester film.

24. A cap sealing label made of a heat shrinkable polyester film according to claim 20.

25. A heat shrinkable polyester film, wherein:

the film has a shrinkage of about 10% to about 40% along its main shrinkage direction when the film is put in hot water of 70°C for 5 sec;

the film has a shrinkage of about 50% or more along

TY061

- 49 -

its main shrinkage direction when the film is put in hot water of 95°C for 5 sec;

the film has a shrinkage of about 10% or less along a direction perpendicular to its main shrinkage direction when the film is put in hot water of 95°C for 5 sec;

the film has a preform finish defective percentage of about 1% or less; and

when the film is formed into a label having a bonded portion, the bonded portion of the label has an adhesive retention of about 95% or more after shrinkage.

26. A heat shrinkable polyester film according to claim 25, wherein the label is a tubular label formed by bonding together two of opposite edges of a rectangular sheet of the film.

27. A heat shrinkable polyester film according to claim 25, wherein the bonded portion is a portion of a tubular label made of a rectangular sheet of the film where two of its opposite edges are bonded together.

28. A heat shrinkable polyester film according to claim 25, wherein the film is a cap sealing heat shrinkable polyester film.

29. A cap sealing label made of a heat shrinkable polyester film according to claim 25.